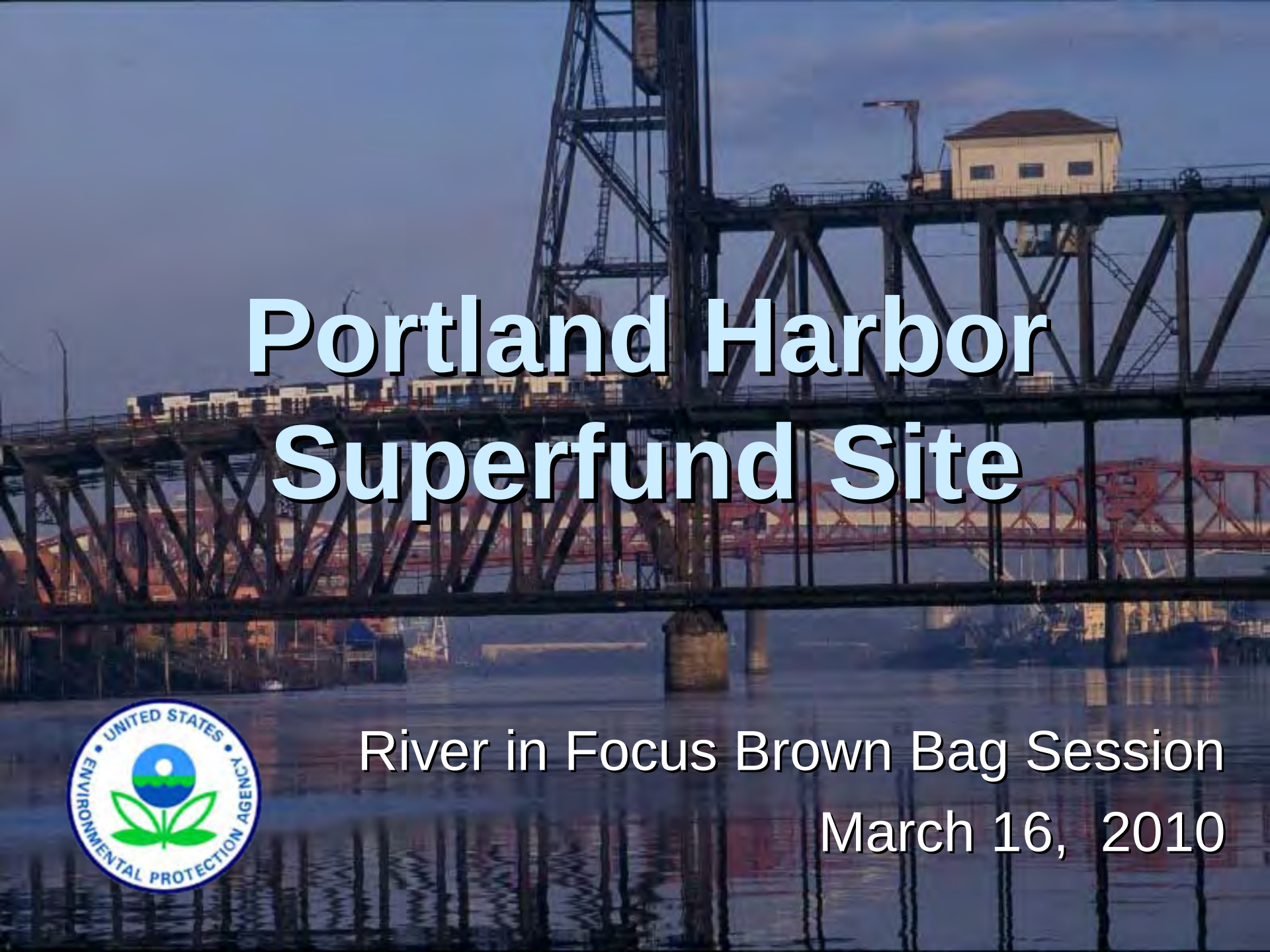


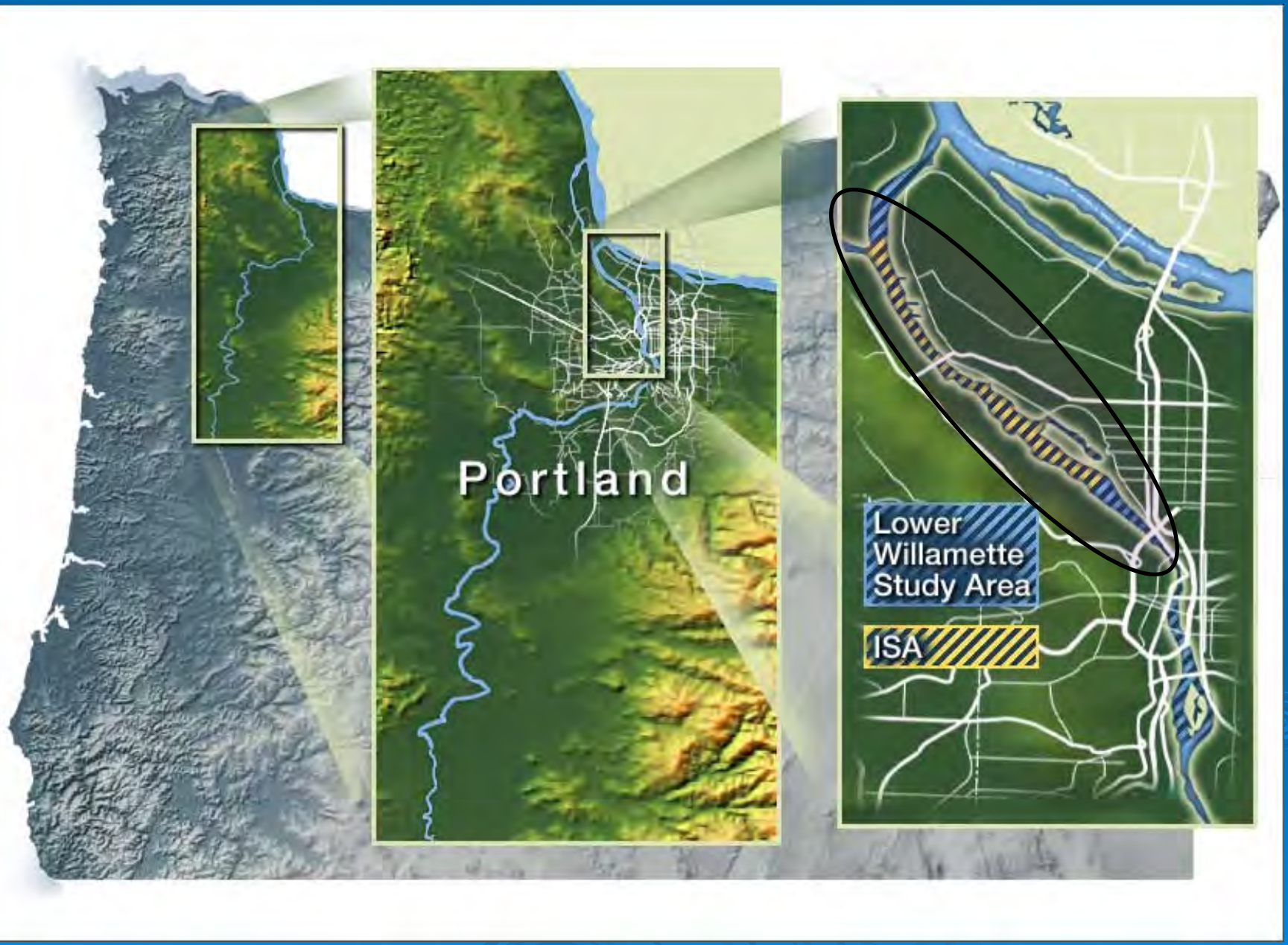
Portland Harbor Superfund Site

River in Focus Brown Bag Session

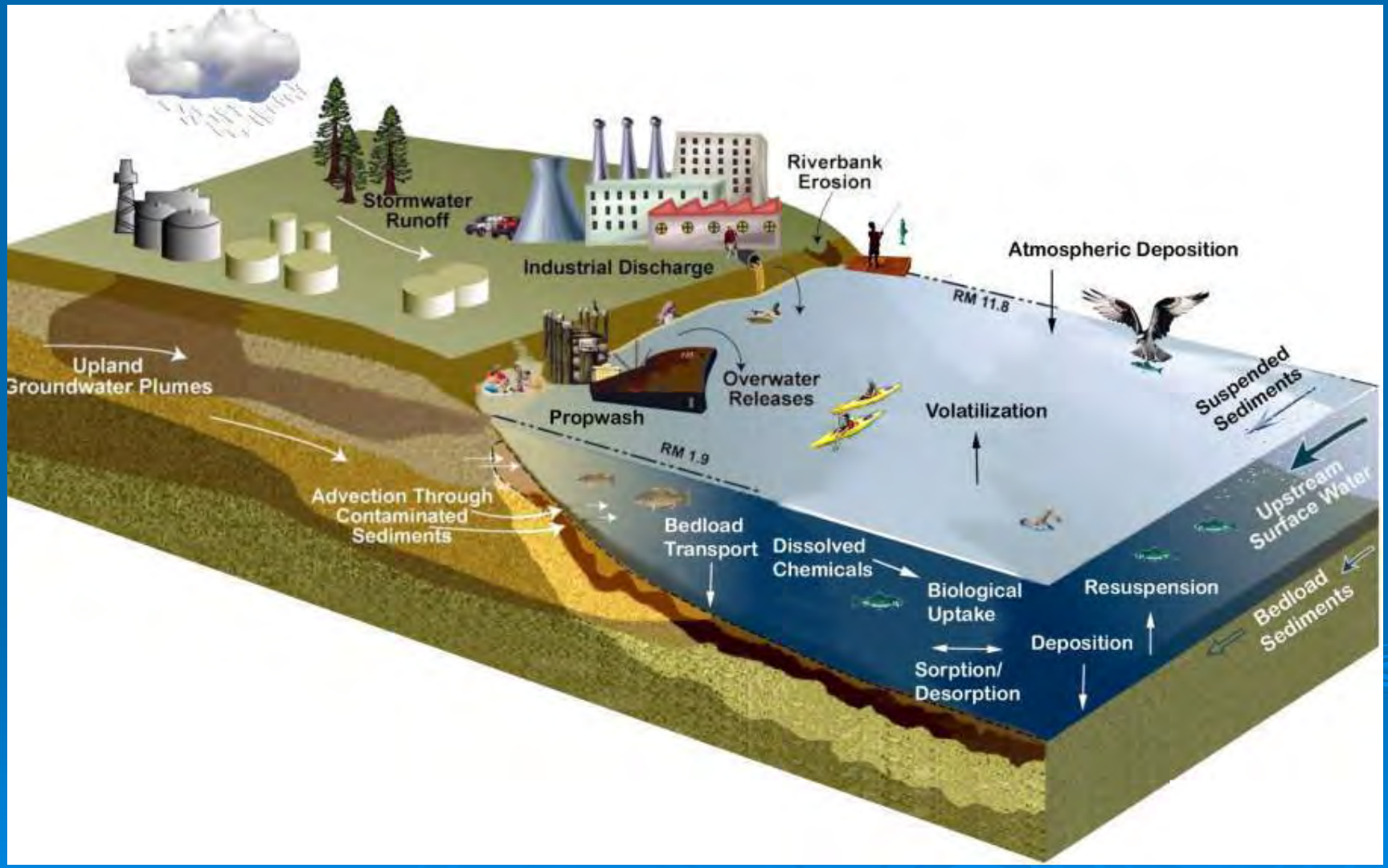
March 16, 2010

Background

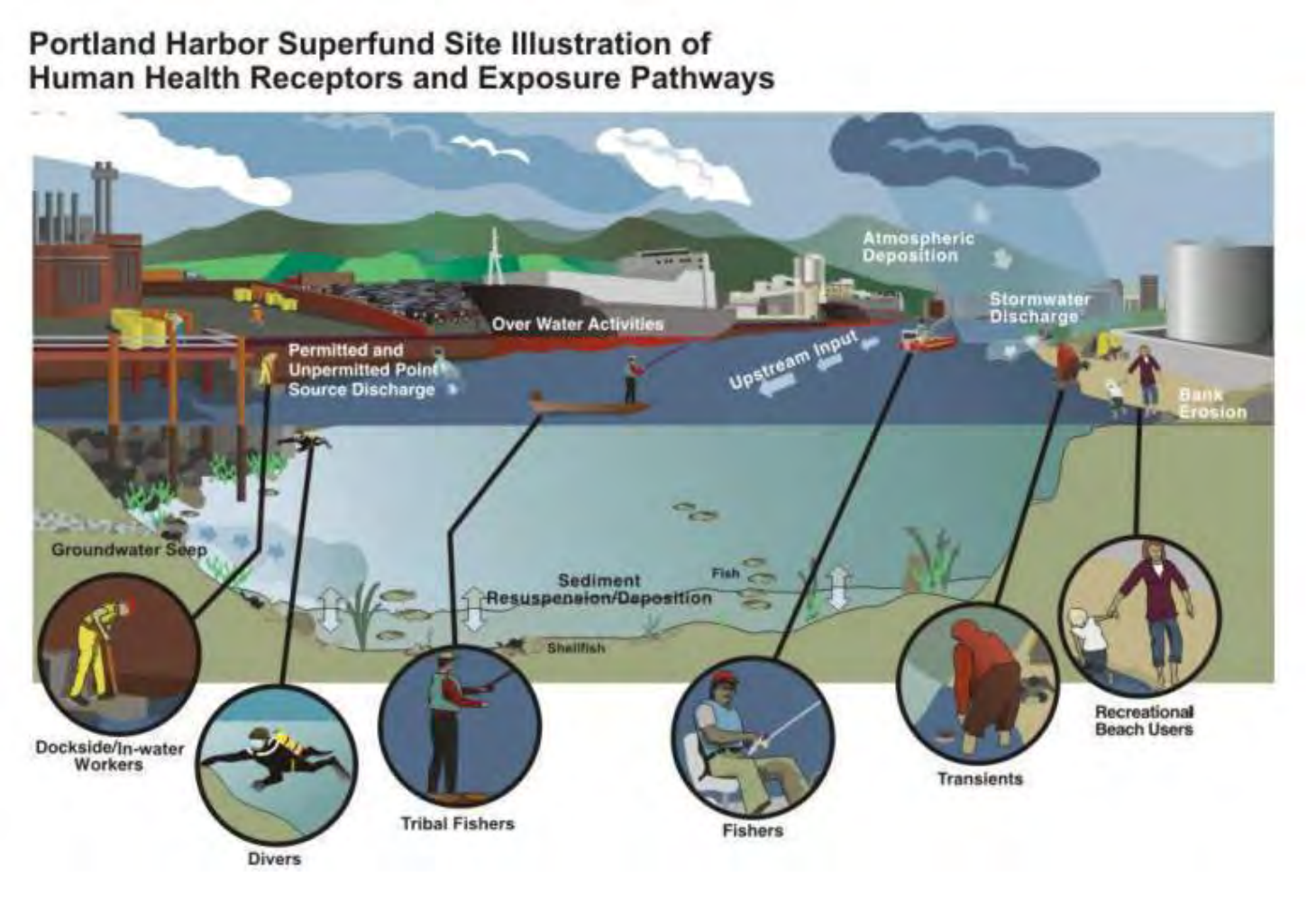
- 11 Mile site at bottom of dynamic watershed
- Many sources and contaminants
  - PCBs, PAHs, metals and pesticides
  - Stormwater, current and historic operations, upstream
- Large number of PRPs
- Large number of government partners
- Large range of site uses
- Migratory corridor for ESA listed species
- Integration of RI/FS with source control, early actions, NRDA, water quality authorities, ESA and USACE dredging


Portland
Lower
Willamette
Study Area
ISA

Sources of Contamination

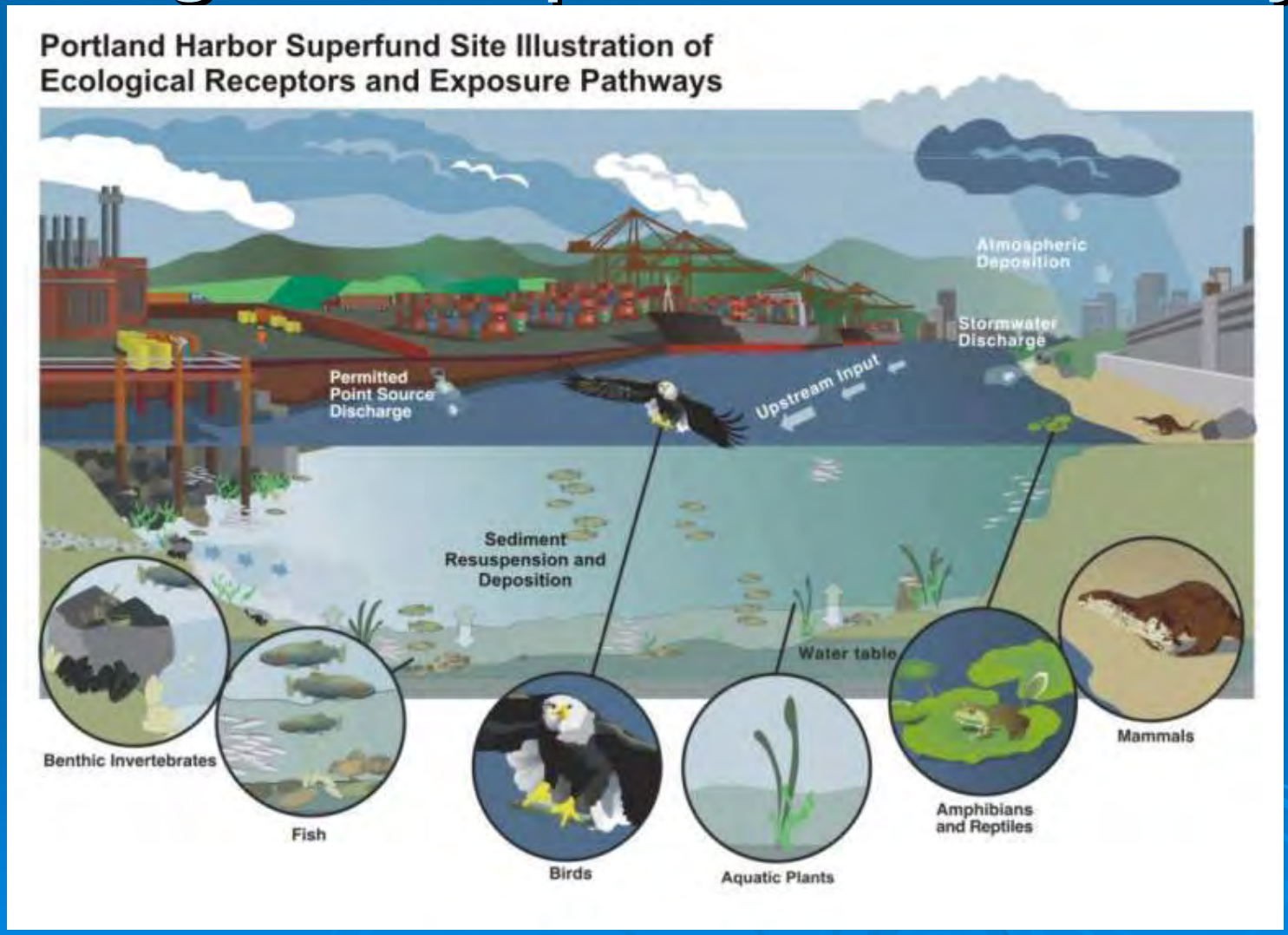


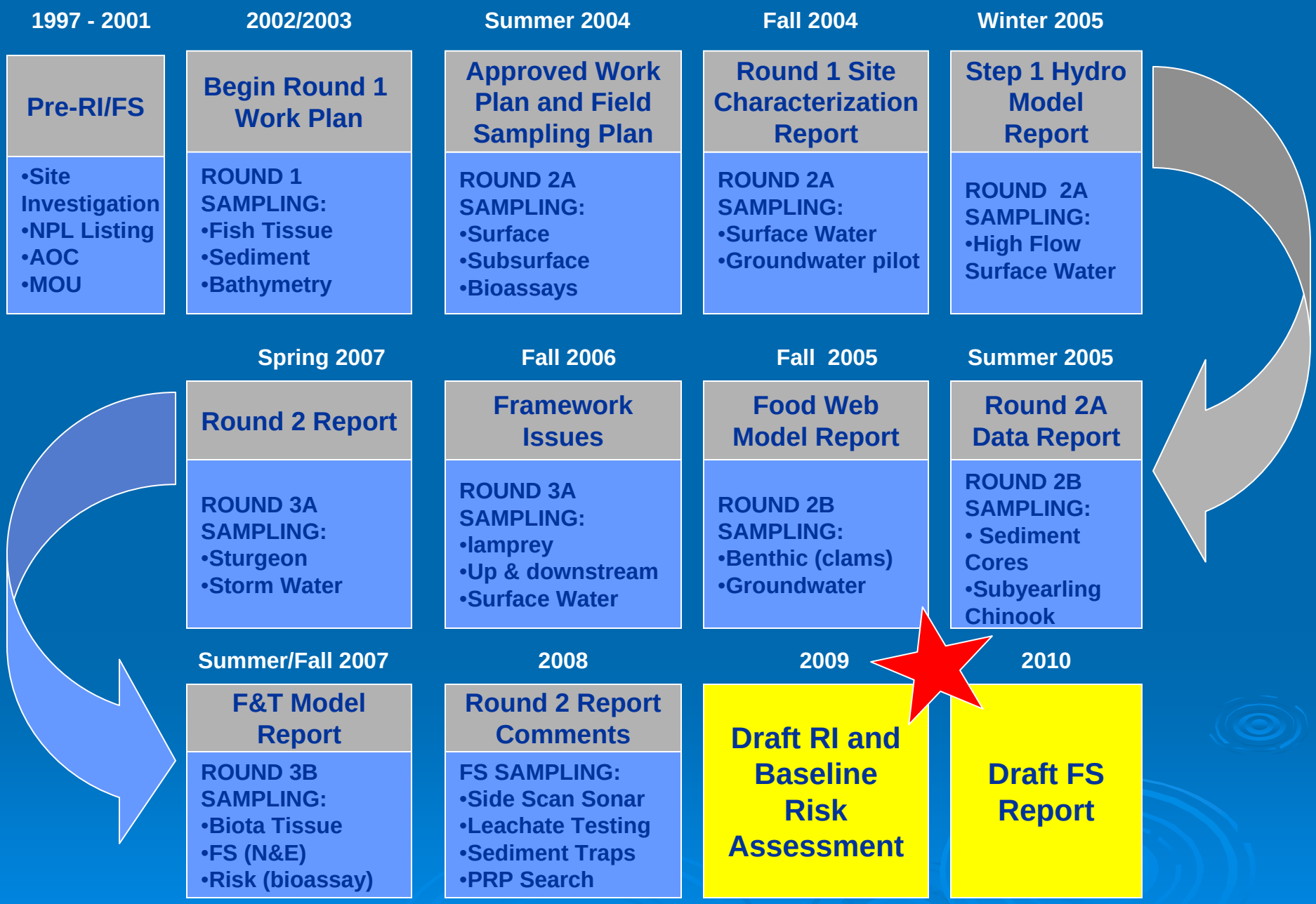
Human Health Exposure Pathways



Draft Privileged and Confidential

Ecological Exposure Pathways





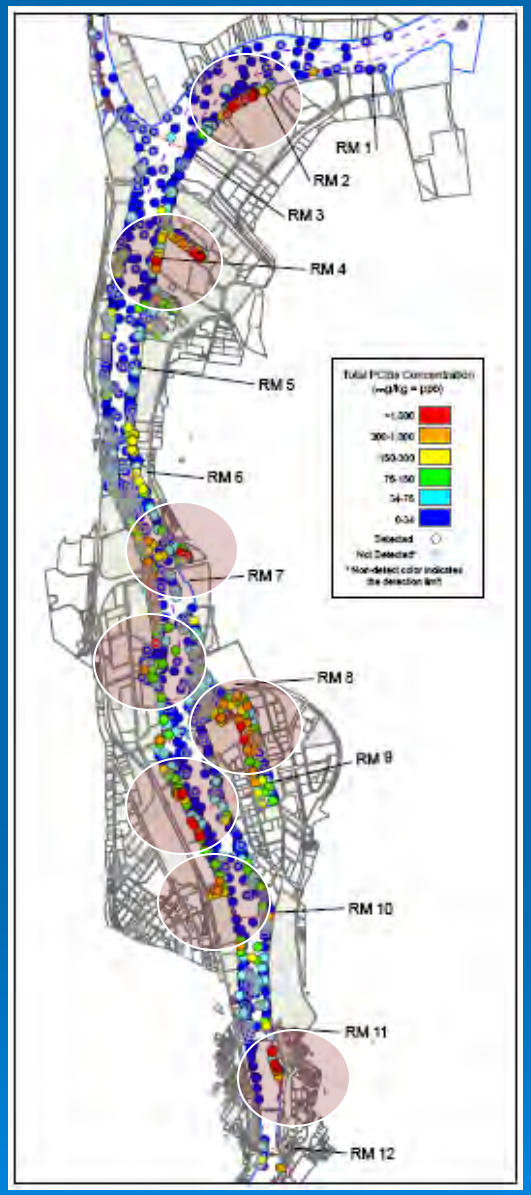
Portland Harbor Remedial Investigation and Feasibility Study

Project Status

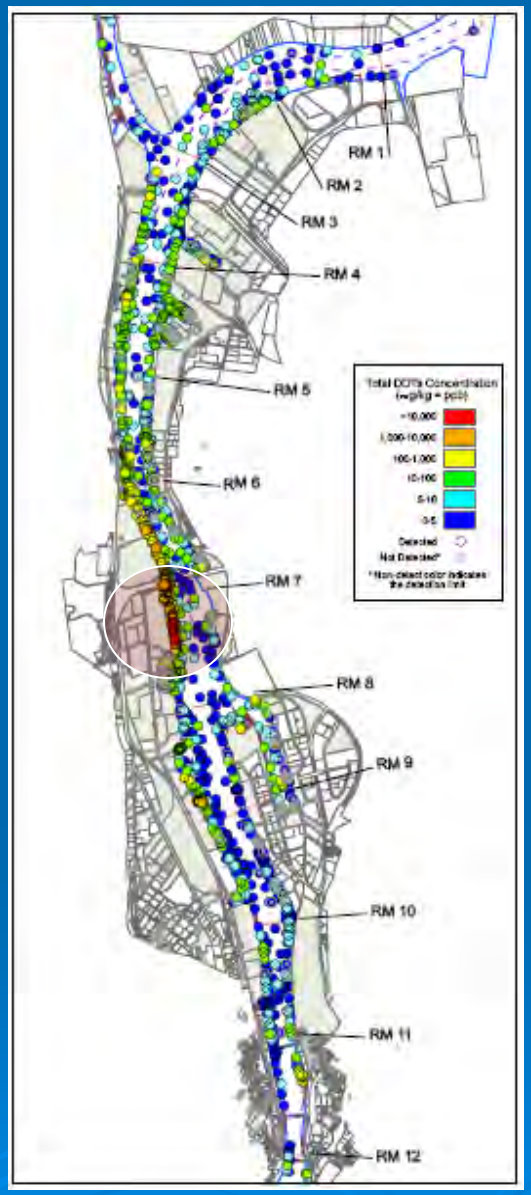
- The Remedial Investigation Report and Baseline Human Health and Ecological Risk Assessments were submitted to EPA by the LWG in fall 2009
- Scoping is underway on the Feasibility Study
  - Identify Areas of Potential Concern (AOPC)
  - Remedial Action Objectives (RAO)
  - Preliminary Remediation Goals (PRG)
- Source Control – DEQ lead
  - Source control evaluations done at many sites
  - Design underway at GASCO and Arkema
  - Stormwater source control efforts moving forward
- Early Actions
  - Early actions implemented at Gasco and T4
  - Additional agreements for Arkema and Gasco

Portland Harbor RI and Risk Assessment Summary

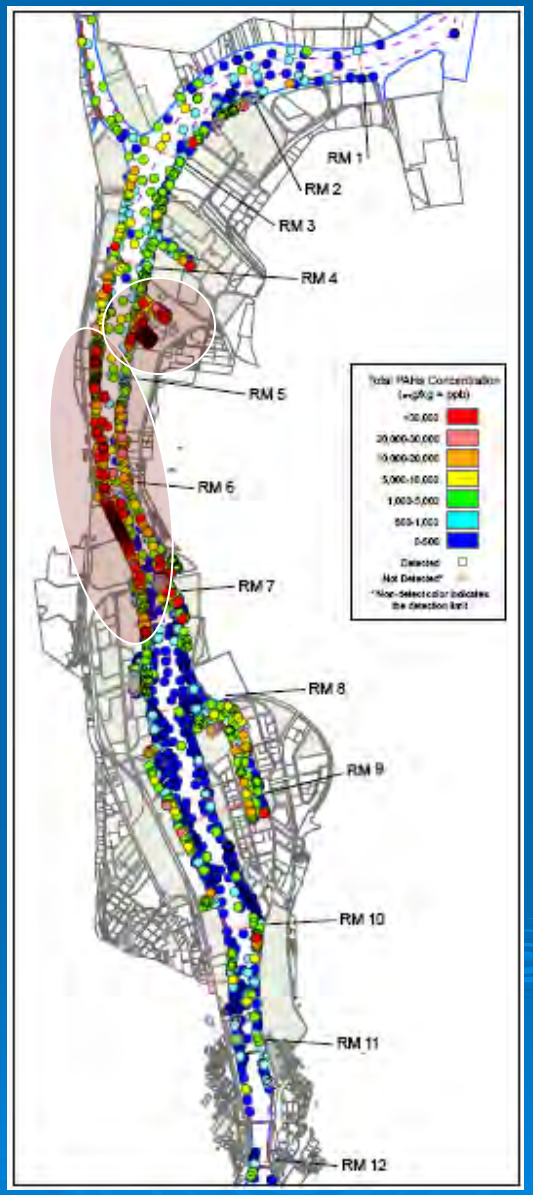
- Comprehensive RI Completed
  - Over 4000 sediment chemistry samples
  - 290 Sediment bioassays
  - 375 tissue samples – 16 species or life stage
  - Surface water, groundwater, stormwater and other tests (e.g., physical testing)
- Human Health Risks
  - Greatest risk from fish consumption (PCBs, dioxins)
  - WQS exceeded in groundwater and surface water
- Ecological Risks
  - Fish – PCBs, DDx, TBT
  - Birds and mammals – PCBs, DDE and dioxin
  - Benthic Community – bioassays, SQGs, TZW



Total PCBs

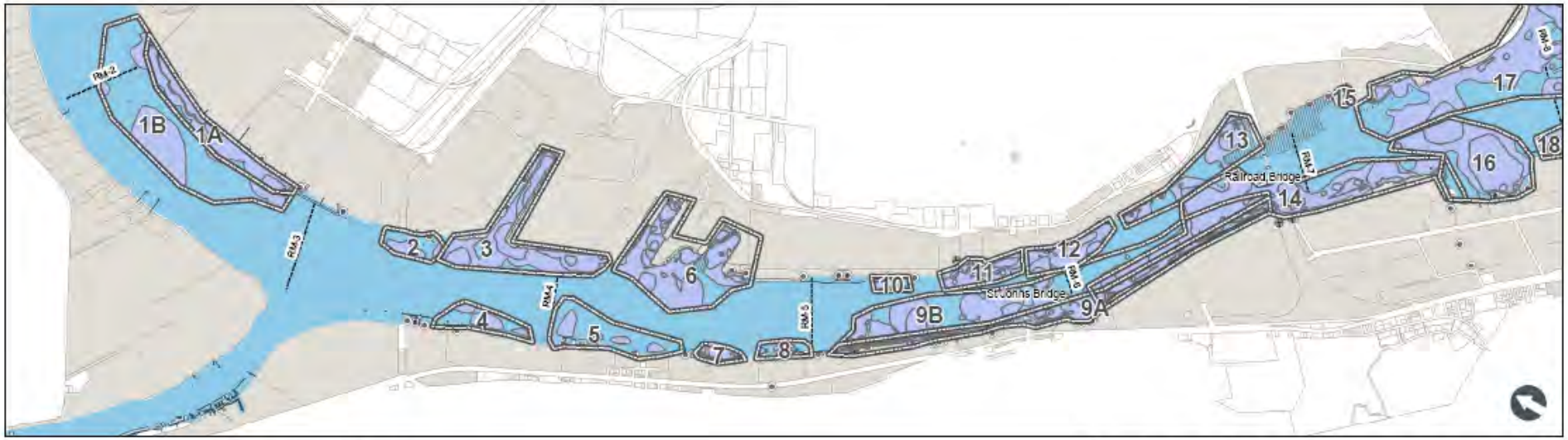


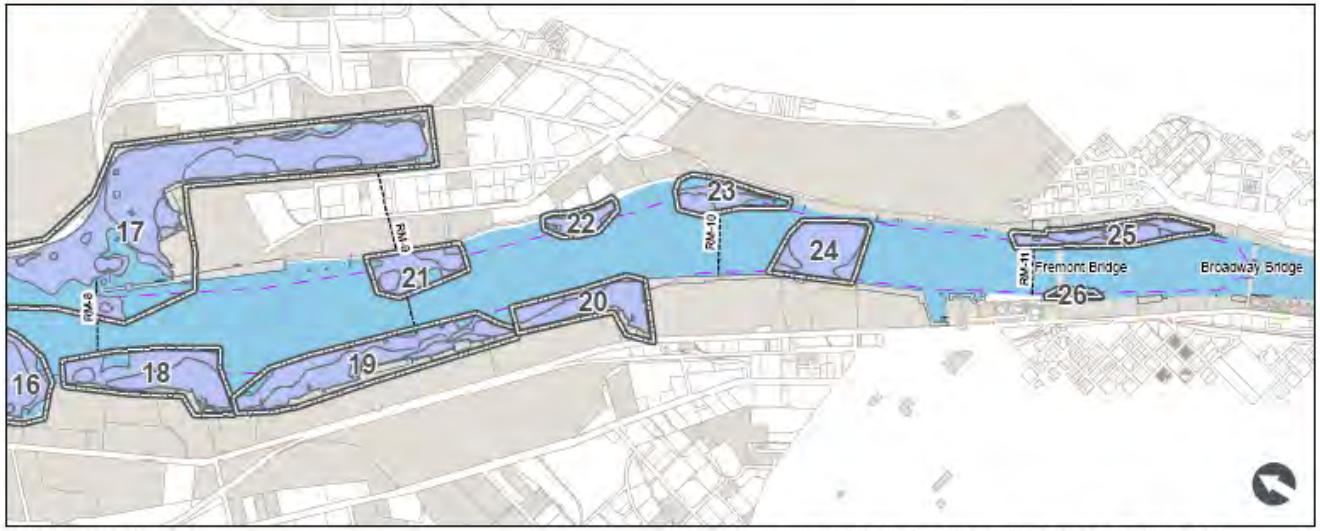
Total DDx



Total PAHs

Areas of Potential Concern





Draft AOPCs for Portland Harbor Site
June 2009
River Mile 1.9 to 11.8

LEGEND
- LWG AOPCs_revised 060509
- EPA AOPCs 051409

Feet
0 1,000 2,000 3,000 4,000

DRAFT

AOPC DEVELOPMENT NOTES:
AOPCs are based on the mapping of surface sediment chemistry against the following lines of evidence:
1. Recreational small mouth bass fish consumption preliminary remediation goal (PRG) for total PCBs at a 10-4 cancer risk level using the by-river mile hill topping approach. The PRG equates to 29.54 ug/kg dry weight total PCBs achieved on a Surface-weighted Average Concentration (SWAC) basis by river mile. Use a replacement value equal to the PRG in the hill topping routine.
2. Site-wide hilltopping approach that results in a site-wide target SWAC of 17 ug/kg total PCBs, which represents one estimate of background. Use 17 ug/kg as the replacement value in the hill topping routine.
3. Tribal fisher direct contact PRG for benzo(a)pyrene at a 10-6 cancer risk; hill topping by direct contact sub areas. This PRG equates to a benzo(a)pyrene concentration of 423.25 ug/kg dry weight. Use a replacement value equal to the PRG in the hill topping routine.
4. "Common" Probable Benthic Risk Areas, which are the areas that both EPA and LWG currently agree have benthic risks.

It should be noted that areas outside of the individual AOPCs identified on this figure also pose an unacceptable, although generally lower, risk to human health and the environment throughout the current study area. These areas will be evaluated as part of a site-wide AOPC.

AOPCs were identified prior to completion of the baseline human health and ecological risk assessments and represent a starting point for the Portland Harbor Feasibility Study (FS). AOPCs may expand or contract based on the consideration of additional site information and the results of the baseline human health and ecological risk assessments.

Portland Harbor Fish Consumption Preliminary Remediation Goals -Total PCBs

Receptor	Fish Species	Rate (g/day)	Risk Level	ATC (ug/kg)	PRG Range (ug/kg)
Child	Large Home Range	7	10-4	1300	170 – 370
Adult	Large Home Range	17.5	10-4	470	60 - 140
Child	Bass	7	10-4	1300	87 - 92
Child	Large Home Range	7	10-5	130	32 - 39
Adult	Bass	17.5	10-4	470	30 - 34
Child	Large Home Range	60	10-4	150	15 - 43
Adult	Large Home Range	17.5	HQ = 1	80	6 - 24
Adult	Large Home Range	17.5	10-5	47	7 - 14
Adult	Large Home Range	142	10-4	57	8 – 12
Child	Bass	60	10-5	15	4 - 9
Adult	Fresh Water Clam	18	10-6	5	3 – 9
Adult	Bass	17.5	HQ = 1	80	1 - 6

The Feasibility Study:

- Develops, screens and evaluates remedial action alternatives based on results of RI and baseline risk assessment
- Evaluates alternatives according to criteria Threshold criteria – protectiveness and compliance with ARARs
  - Evaluation criteria – long and short-term effectiveness, implementability, reduction of toxicity, mobility and volume through treatment and cost
  - Modifying criteria – state and community acceptance
- Is used as basis for remedy selection in ROD

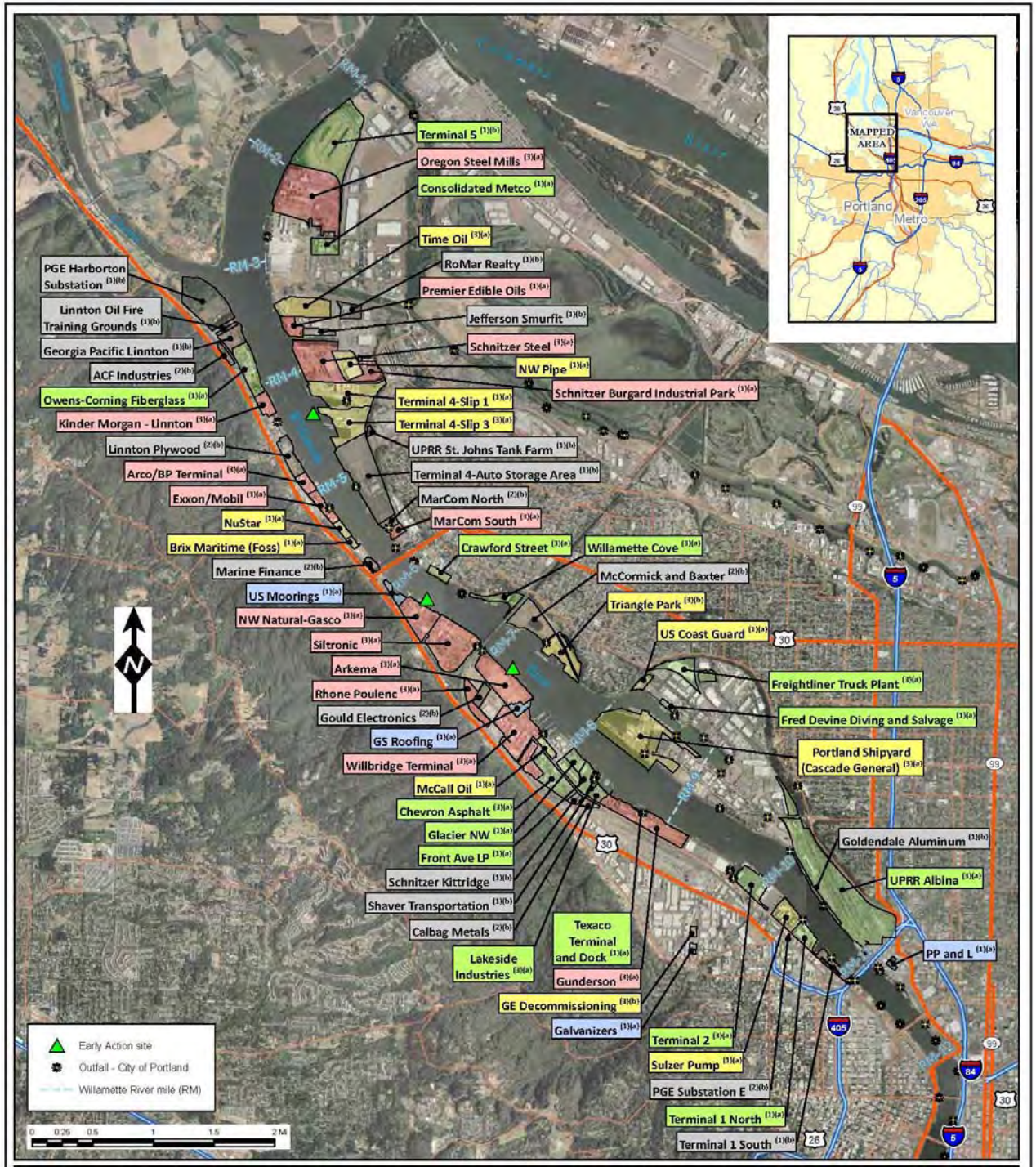
The Feasibility Study Does Not:

- Determine who cleans up what
- Fully design remedies (*e.g.*, dredge or cap boundaries)
  - (Must have public input before remedy selection)
- Select specific technologies (*e.g.*, bucket vs. hydraulic dredge)
- Select contractors
- Select specific disposal sites

Most Common Remedial Options

- Dredging sediments and disposing of them in a confined facility such as a landfill
- Treatment – including innovative technologies – uses chemical or physical processes to remove sediment chemicals or make them less toxic
- Capping sediments in place with clean sand or other materials to isolate them from the environment
- Monitored Natural Recovery - monitoring a water body's ability to clean itself through natural processes

Portland Harbor Upland Cleanup Sites



Site source control priority

- High priority site
- Medium priority site
- Low priority site
- Priority to be determined
- Not a current or anticipated future source

FOOTNOTES

SOURCE CONTROL MEASURE (SCM) STATUS
(1) - None
(2) - Source control measure in place
(3) - Interim source control measure in place

SOURCE CONTROL EVALUATION (SCE) STATUS
(a) - Source control evaluation in progress
(b) - Source control evaluation complete

DEQ
State of Oregon Department of Environmental Quality

Early Actions

GASCO – Before

Terminal 4 – Before

GASCO – After

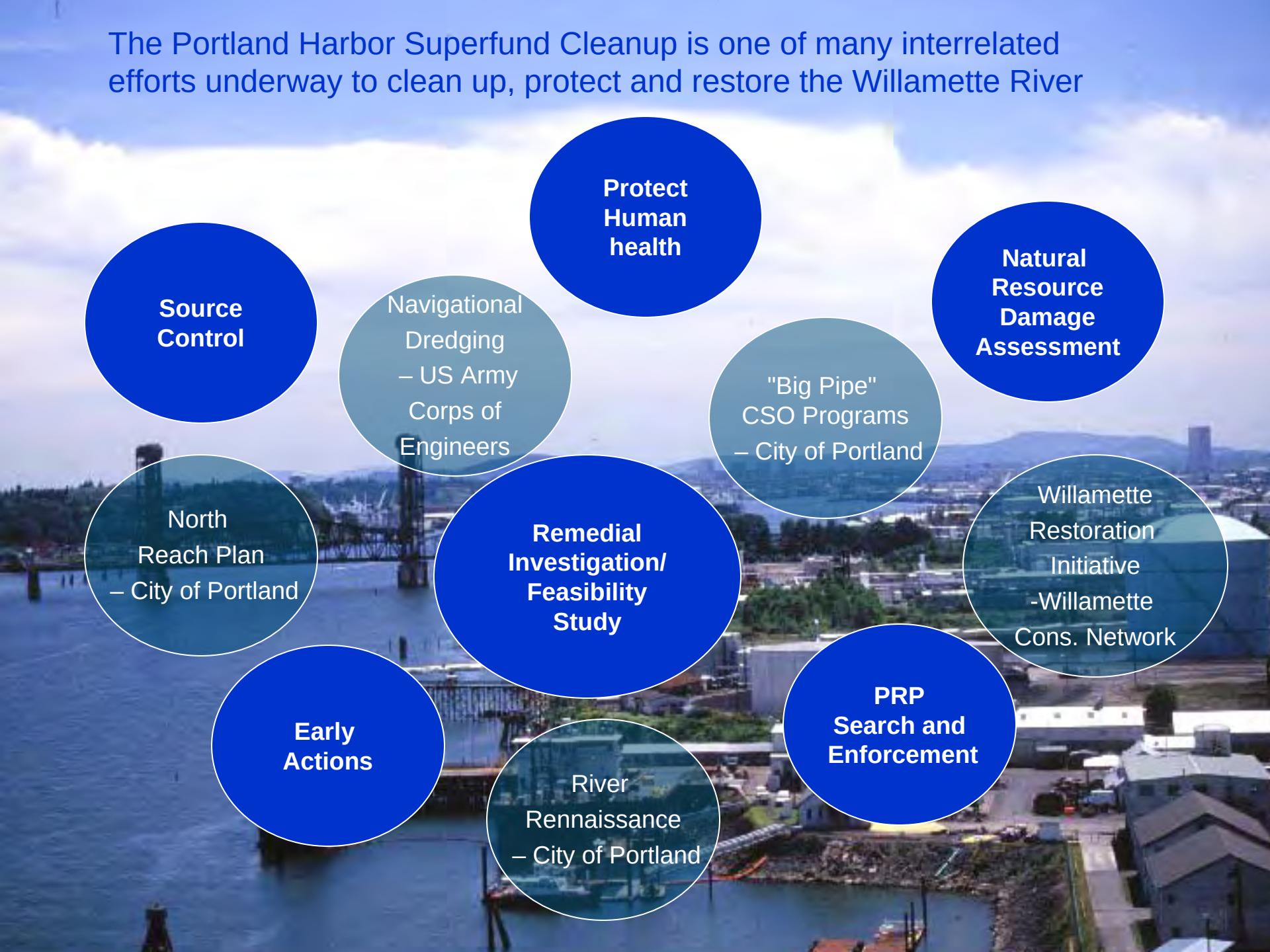
Terminal 4 – After

PRP Search/Allocation

- Over 100 parties received EPA general notice of liability letters between 2000 and 2010
- EPA will continue to issue notice letters as part of its ongoing search and identification of parties that may have responsibility for paying for the cleanup
- PRP have separate allocation process

Community Involvement

The Portland Harbor Superfund Cleanup is one of many interrelated efforts underway to clean up, protect and restore the Willamette River



Schedule

- EPA remains committed to 2012 ROD
  - 2010 - Review RI and RA and prepare draft FS
  - 2011 – Proposed Plan
  - 2012 – ROD
- Initiating FS concurrent with RI and RA
- 2011 Proposed Plan assumes the draft FS will provide adequate basis to draft the plan
- 2012 ROD includes many review layers
  - Public comment/response
  - CSTAG and National Remedy Review Board reviews

Summary

- Draft risk assessments and RI completed
- Chemical, biological and physical features of the site are well characterized
- Key risk drivers and AOPCs identified
- Source control proceeding
- Two Phase I early actions completed
- FS scoping (RAOs, ARARs, POC, alternative screening and FS vision) is current focus
- Schedule challenges remain

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For more information

- www.epa.gov/region10/PortlandHarbor
- Information Repositories
  - **St. Johns Library - key documents**
  - NW District Library
  - Main Library
- Superfund Records Center in Seattle